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Climate Change, Intellectual Property, and the Scope of Human Rights Obligations

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*by Kavita Kapur**

Introduction

Hunger,[1] displacement,[2] and loss of culture and traditional ways of life[3] are the likely consequences of continuing on the world's current trajectory of climate change.[4] These phenomena and the images of suffering that they evoke reflect situations rich with human rights concerns. Indeed, rights activists demanding international action to halt global warming invoke these themes of human vulnerability as a central part of their protests.[5] However, the extent to which the threatened effects of climate change can be understood as imposing legal obligations within the normative framework of international human rights law, rather than simply as rhetorical ideas of moral rights, remains unclear.[6] In January 2009, the UN Office of the High Commissioner for Human Rights ("OHCHR") published a report announcing that climate change had a range of effects on human rights.[7] Although it may be unclear whether those effects constitute violations of human rights law, states still have obligations to protect those affected by climate change.[8] The OHCHR report provided minimal guidance on what those human rights obligations consist of, thus much remains uncertain about the scope of the obligations imposed on states by climate change. As the international community continues to wrangle with the task of delineating a strategy for climate stabilization,[9] clarifying the human rights obligations of states may help to inform both relevant national policies and the emerging international framework.

The move towards climate stabilization, and consequently an alleviation of pressures on human rights, will require all states to transform the ways in which they produce energy, especially developing countries with substantial green house gas emissions. This in turn demands adequate development, deployment, and implementation of clean energy technologies, and diffusion to those countries in need, including much of the developing world.[10] Because of the high-tech nature of clean energy solutions, the protection of intellectual property ("IP") rights has an important role to play in each stage of the process.[11]

States seeking climate change solutions will increasingly deal with tensions caused when human rights and IP protection obligations conflict. States must find a way to protect human rights while addressing climate change.[12] This article attempts to anticipate some of these tensions and to propose potential resolutions. The climate change crisis, the clean energy solutions that have emerged in response, and the role of intellectual property protections in that process, provide a backdrop against which the relationship between human rights and climate change can be charted. This article begins by looking specifically at the challenges that climate change poses to the traditional human rights framework, as well as the sources of human rights obligations in relation to climate change. The discussion then turns to questions of access to clean energy technology, and contrasts the issue to the debate over access to essential medicines. Next, the article focuses on prospective tensions with IP protections in the context of access to clean energy technology by applying various analytical frameworks grounded in human rights. The article concludes by underscoring the importance of the human rights analysis in mediating this tension and by cautioning against the creation of fortified IP protections that do not prioritize human rights considerations.

Climate Change, Clean Energy Solutions, and Intellectual Property

The Climate Change Problem

The temperature of the global climate is rising.[13] Once the subject of considerable debate,[14] the fact of global warming, both natural and anthropogenic (human-induced), is now nearly universally accepted.[15] Most states in the international community are members of the United Nations Framework Convention on Climate Change ("UNFCCC"), an international treaty aimed at the reduction of global warming.[16] Members of the UNFCCC are thus aligned in their commitment to combat the "change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."[17] Significant strides made in the direction of reaching international consensus on the problem of climate change are due in part to the availability of reliable scientific information on the causes and effects of global warming.[18]

In particular, the reports of the Intergovernmental Panel on Climate Change ("IPCC") contain assessments and projections about climate change which are regarded as authoritative by the international community.[19] The IPCC is an intergovernmental scientific organization established by the UN Environment Programme and the World Meteorological Organization, currently with 194 members, that reviews and assesses available information on climate change in order to provide "rigorous and balanced scientific information to decision makers."[20]

According to the IPCC's most recent assessment, published in 2007, there is sufficient scientific consensus to unequivocally establish the fact of global warming.[21] In making this conclusion, the IPCC draws upon observations of increases in global average

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air and ocean temperatures, the widespread melting of snow and ice, and the rising global average sea level.[22] Additionally, the same report asserts with more than ninety percent certainty that most of the global warming experienced in the last fifty years is due to anthropogenic emissions of greenhouse gases.[23]

Beyond establishing the reality of human-induced climate change, the IPCC assessment also presents the current scientific consensus on the effects of climate change.[24] These include changes in weather patterns, which are ninety percent certain to result in the shrinking of snow-covered areas and of sea ice, rising sea levels and water temperatures, increased frequency of heat waves, and heavy precipitation events.[25] These weather changes will in turn have grave consequences for agriculture, forestry, ecosystems, water resources, human health, and society at large.[26]

The increased strength of consensus around the anthropogenic causes of climate change has inspired response efforts aimed at reducing emissions levels. These strategies seek to mitigate the trend of global warming by sufficiently reducing green house gas emissions to a level that would stabilize the rising climate temperature.[27] Although specific target emissions levels were established in the Kyoto Protocol to the UNFCCC,[28] the shift towards a stable climate will require additional strategies and tools in order to reach any global target levels.

Clean Energy Technologies and Intellectual Property

Climate stabilization, or the emissions reductions that must be reached globally in order to effectively combat global warming, requires a drastic overhaul of energy production systems.[29] As such, there is a need for efficient clean energy technologies that can be developed relatively quickly, deployed into action, and diffused widely.[30]

Efforts to develop, deploy, and diffuse clean energy technologies have been underway for many years now, with significant successes. There is great variation in the types of technologies available to facilitate the global shift to less carbon-reliant energy production. Amongst the most prominent technologies are photovoltaic (solar), biofuels, and wind technologies.[31]

As with any other technology industry, clean energy technologies are subject to a variety of IP protections. However, there is considerable debate over the propriety and scope of such IP protections since these technologies are integral to alleviating the global stress of climate change.[32] Those who generally favor IP protections for clean energy technologies argue that incentives are critical to drive innovation and diffusion of such technologies.[33] Without IP protections, the theory goes, innovation would be severely limited and new clean energy technologies would not be developed.[34] Opponents of IP protections for clean energy focus on the problems of access caused by the exclusion rights afforded to patent holders, which almost inevitably results in prohibitively high costs.[35] Thus, IP protections may render the technology unaffordable for those who most desperately need it, including, in this case, those developing countries with high energy demands.

Basic renewable energy technologies, including wind, biofuel, and photovoltaic, are not new and have been off patent protection for a number of years.[36] Instead, specific improvements and add-on features to these existing technologies are increasingly being patented.[37] The emerging modification and adaptations are variously aimed at improving efficiency by minimizing cost, maximizing energy production, or both.[38] With solar energy, for example, new technologies attempt to create a thin film of semiconductors that can be applied to existing surfaces, greatly reducing the costs of manufacturing solar technology.[39]

While these complex technologies and processes are central to any effort to advance climate stabilization, the impacts of climate change on humans should not be overlooked. Scientific, environmental, and economic dimensions have long occupied center stage in the discourse around climate change. However, the grave threat that climate change poses to human lives and human well-being should be the central consideration in crafting solutions that are responsive to the lived realities of this crisis.

Human Rights and Climate Change

The symbolic force of framing climate change as an affront to human rights may in itself have great utility. However, it does not carry the same weight or consequences as violations of states' legal duties to guarantee the rights of individuals in their territories. States will face little formal accountability for breaching moral priorities that are simply phrased as a matter of conceptual right.[40] Violations of international human rights law, on the other hand, may give rise to monitoring by an international treaty body, scrutiny by a special rapporteur, or litigation of individual petitions before a regional human rights institution.[41] Additionally, because the legal obligations of a state under international human rights law include those standards to which the state has explicitly consented to be bound, violations of human rights law are a form of a breach. Such a breach threatens to call the credibility of a state into serious consideration.

Challenging the Framework

Conceptualizing the effects of climate change as human rights violations poses a difficult conundrum for the international human rights law framework. At one level, there is no explicit normative provision dealing with climate change that would give rise to an international legal obligation.[42] The universal treaties that create international human rights obligations for states do not explicitly address the dangers posed by the climate change crisis.[43] Even if we attempt to locate the human impacts of climate change within the framework of environmental protection, the key human rights treaties—the International Covenant on Civil and Political Rights ("ICCPR")[44] and the International Covenant on Economic, Social, and Cultural Rights ("ICESCR")[45]—include no reference to a specific right to a safe and healthy environment.[46]

The global nature of greenhouse gas emissions along with the related transboundary impacts disrupts the traditional focus of human rights on obligations that states have to individuals in their territories.[47] Although there are certain states who have contributed more significantly to climate change, the effects on their populations is often more attenuated. The most severe impacts threaten to disrupt the lives of citizens in other parts

of the world.[48] Indeed, the states whose citizens would be most dramatically affected by climate change, and thus who have the greatest stake in efforts to combat global warming, are those states who have least contributed to global greenhouse gas emissions.[49] Holding these states responsible for human rights violations that they did not directly cause is untenable under the existing framework. The traditionally territorial nature of human rights obligations is thus inadequate to address the global climate change problem.

Human Rights Obligations Arising from Climate Change

Pursuant to a resolution of the Human Rights Council, in January 2009 the UN Office of the High Commissioner for Human Rights ("OHCHR") released a detailed analytical report of the relationship between climate change and human rights.[50] The report analyzed the impacts of climate change on various human rights protected within the ICCPR, the ICESCR, and other international human rights treaties.[51] Specifically, the OHCHR report detailed the significant threats that climate change poses to the rights to life, adequate food, water, health, adequate housing, and self-determination, while also highlighting the particular impacts on highly vulnerable groups such as women, children, and indigenous peoples.[52] Additionally, the report discussed the prospects for displacement, as well as for conflict and related security risks, that are likely to occur as a result of climate change along with the attendant human rights implications for the individuals affected.[53]

The OHCHR report concluded that while it was unclear whether the effects of climate change amounted to human rights violations, states nonetheless had obligations to protect human rights in the context of national-level measures undertaken to address climate change.[54] In addition, human rights law also obliges states to engage in international cooperation to protect and promote human rights. Specifically, the ICESCR carries extraterritorial obligations that require states to

> (1) refrain from interfering with the enjoyment of human rights in other countries; (2) take measures to prevent third parties over which they hold influence from interfering with the enjoyment of human rights in other countries; (3) take steps through international assistance and cooperation, depending on the availability of resources, to facilitate the fulfillment of human rights in other countries, including disaster relief, emergency assistance, and assistance to refugees and displaced persons; and (4) ensure that human rights are given due attention in international agreements and that such agreements do not adversely impact upon human rights.[55]

Within the framework of the ICESCR, a state is obliged to "take steps, individually and through international assistance and cooperation, especially economic and technical, to the maximum of its available resources, with a view to achieving progressively the full realization of the rights recognized in the present Covenant by all appropriate means."[56] The duty to engage in international cooperative efforts aimed at the advancement of economic, social, and cultural rights is in direct contrast to the language in the ICCPR, which expressly describes obligations of a state to "individuals within its territory and subject to its jurisdiction."[57] The broader scope of duties under the ICESCR than in a traditional human rights model is supported by the General Comments of the Committee on Economic, Social and Cultural Rights ("CESCR") which note, *inter alia*, that under the ICESCR, it is "particularly incumbent on States parties and other actors in a position to assist to provide 'international assistance and cooperation, especially economic and technical' which enable developing countries to fulfill their core and other obligations."[58]

Access to Clean Energy Technology

Overview of Technology and Access Issues

Most of the clean energy technology that has been developed in response to climate change has originated in developed countries.[59] This has created an imbalance in access between developing and developed countries, with developing countries asserting that intellectual property regimes prevent them from gaining access to these critical technologies.[60] Although there have been numerous attempts to study the issue, there is no conclusive evidence that IP protections present or do not present a barrier to the diffusion of clean energy technologies.[61] However, there are at least some indications that the process of negotiating for access when the base technology is subject to foreign IP protection hinders developing country industries that want to produce new technologies or develop an adaptation to an existing technology.[62] Strong IP protection in developing countries may promote diffusion by assuring patent holders that if they license their technology to a firm in the target country, there will be sufficient protection against unlawful copying.[63]

Regardless of the lack of conclusive data on whether intellectual property rights are a barrier to access to clean energy technologies, it is irrefutable that they do influence access in a variety of different ways.[64] Despite the particular importance of encouraging innovation in the clean energy technology industry in light of the great significance that slight modifications or adaptations can have, technology transfer has rarely focused on supporting the development stage of climate stabilization technology.[65] Instead, funding and other forms of programmatic support have been the primary strategies for spurring innovation in developing countries.[66]

Most of the technology transfer that has taken place in the context of climate change has been in the deployment stage.[67] Transfer of technology for the purposes of deployment can take various forms. First, products that incorporate the technology can be transferred directly to the developing country for domestic use.[68] A second form of transfer would be licensing production to a company in the target country.[69] Third, transfer may simply involve capacity building for research and production facilities in the target country.[70]

Contrasting Clean Energy and Essential Medicines

Despite the apparent parallels in the debates over access to medicine and access to clean energy technology, there are some acute differences between the two industries that limit the extent to which arguments for access can be shared. One key difference between pharmaceuticals and clean energy is the availability of substitutes. A drug that is developed to cure or treat a particular disease is likely to be one of the only medications that serve that purpose; there are unlikely to be many, if any, substitutes.[71] Technologies that produce clean energy, on the other hand, range from wind and solar to hydro and nuclear.

The framework of normative instruments for facilitating access to essential medicines is much richer than that for clean energy technologies. The Doha Declaration to the Agreement on Trade-Related Aspects of Intellectual Property Rights ("TRIPS") formally recognized the flexibilities within the TRIPS agreement that could be used as a basis for compulsory licenses on essential medicines.[72] The CESCR even issued a General Comment asserting that the right to health includes an obligation for states to promote medical research and to provide access to affordable treatments, including essential drugs.[73]

The Doha Declaration does not significantly adopt a human rights framework of analysis despite the human rights arguments made by many within the access to medicines movement.[74] Instead, it carves out of the general rule of intellectual property protection a limited range of exceptions to apply in narrow circumstances.[75] Thus, the effect of the Doha Declaration is limited to issues directly implicating public health rather than the full range of human rights.[76]

Regime Shifting: Human Rights Analysis

As the forum for the coordination of the global climate stabilization framework, the UNFCCC has been the site of negotiations over technology transfer, innovation, collaborations, and other strategies aimed at facilitating the development, deployment, and diffusion of clean energy technologies in the developing world.[77] The various climate change conferences held under the UNFCCC auspices have not recognized any progress towards articulating an actionable global strategy to facilitate a developing world shift to clean energy technologies.[78] At the same time, activists, nongovernmental organizations ("NGOs"), and international organizations have made repeated calls for the mainstreaming of human rights concerns within the UNFCCC process.[79] These demands have similarly been met with little real action in the way of prioritizing human rights within the negotiating texts and processes.[80] Accordingly, the UNFCCC regime has yet to connect human rights to the debate over how to facilitate developing world adoption and adaptation of clean energy technologies.[81] Therefore, a discursive regime shift[82] should be attempted from the politicized negotiations of the UNFCCC process to a series of human rights analyses that seek to link the human impacts of climate change to the question of barriers to clean energy technology. While the flexibilities within the TRIPS Agreement that sufficed for guaranteeing access to medicines in the Doha Declaration may provide a sufficient legal basis for the granting of compulsory licenses for clean energy technologies, the alternative frameworks presented in this section aim to conduct the analysis starting from a position of human rights protection.[83] These frameworks are centered in the protection of human rights and are utilized to find theories of accommodating intellectual property protections.

The starting point of a human rights analysis is necessarily international instruments and other sources of human rights obligations. This framework of analysis is in contrast to intellectual property analyses, which take as the starting point instruments relating to intellectual property rights.[84]

Human Rights Obligations

Intellectual Property Rights as Human Rights

The protection of intellectual property is not simply an economic tool designed to encourage and award innovation. Instead, the protections afforded to a patent holder may also be an iteration of human rights. As such, intellectual property systems may be frameworks for states to fulfill their human rights obligations. The ICESCR delineates the right "authors" to "protection of moral and material interests resulting from any scientific, literary, or artistic production."[85]

Rights Affected by Climate Change

In accordance with the guidance provided by the CESCR, states are obliged to ensure the minimum essential level of each right codified in the ICESCR.[86] The duties of states derive from the obligation to secure certain minimum standards of human rights; thus, the duty is not fulfilled simply by adopting a particular policy or engaging in a particular transfer of technology if that policy or transfer does not result in the realization of the minimum value of the relevant human right.[87] Rather, the duty is satisfied when the minimum standards are guaranteed.[88] This substantive duty and its various constituent rights oblige states to simultaneously advance development, deployment, and diffusion of clean energy technology.[89] The human rights obligation includes not only the importation of technology, but also support for local capabilities to adopt, diffuse, adapt, and develop technologies that fit within the particular circumstances of the state. This results in changing energy production systems in a manner sufficient to meet the core minimum standards of human rights.[90] The simple transfer of technology will not provide the requisite knowledge about how or why the technology works without this focus on local industry and infrastructure.[91] Consequently, it will be of little utility to advancing the realization of human rights.

The ICESCR obliges developed states and other actors to engage in international cooperation in furtherance of the realization of human rights in developing countries. This does little to ease the tension of how to balance the human rights of those most directly affected by climate change with the rights to moral and material interests of those innovators who are developing technological solutions to the energy crisis. While various human rights are affected by climate change, the legal obligations of states to cooperatively address climate change issues are not based on any explicit norm. Nonetheless, various frameworks of analysis centered on human rights may prove useful in developing a sense for how these obligations may play out vis-à-vis IP protections.

Frameworks of Analysis

Strict Scrutiny

Borrowing the term from U.S. Constitutional law, Margaret Chon proposes a principle of substantive equality that would require adjudicators and norm-generators to exercise a non-deferential standard of review when considering whether a grant of an exclusive IP right or the denial of a limitation on the right appears to conflict with a basic human need.[92] Although motivated by a development rationale, Chon's framework is useful for thinking about clean energy technology as a "public good" that advances an important human need (or a series of human rights). The framework requires the potential IP barriers to access to clean energy technologies to be balanced against the ways in which those technologies would help to guarantee human rights by providing access to an important public good. As Chon notes, this is not only important for the advancement of development and human rights, but also for the fortification of IP systems in developing countries that "cannot 'take root' absent a basic national capacity, which can only be developed with a population that has its essential needs met."[93]

The extent to which IP is a barrier to the spread of clean energy technology through the developing world is admittedly uncertain. Yet, its recurrent mention in policy documents and commentary on the UNFCCC process imply that it is at least perceived as an important issue by both the technology companies who hold the IP protections and developing countries who encounter obstacles in accessing existing clean energy technologies.[94] Applying Chon's strict scrutiny to a theoretical category of IP protections for such technologies prioritizes the experiences of the most marginalized within the process of norm setting. The implications on the rights of indigenous communities, displaced persons, and other vulnerable groups who suffer as a result of lack of access to clean energy technologies becomes the starting point against which all IP protection regimes must be measured. IP regimes that pose barriers to access to clean energy technology would be deemed excessive where such lack of access negatively impacts human rights.

The appeal of this framework is in its stark simplicity. It brings forward the human rights impacts of climate change that are all too often relegated to the background of international discussions or to exceptional circumstances in analyzing the TRIPS flexibilities. Strict scrutiny allows for the human side of climate change to be made the center point of the discussion. However, the problem with applying this analysis to clean energy technologies is that it is difficult to imagine any IP protections without some negative impact on access and human rights. In other words, all IP protections would seem to fail the strict scrutiny test. As such, the utility of strict scrutiny is less as a framework than as an important framing device that establishes the centrality of human rights concerns.

Human Rights Primacy

Another framework through which to understand the relationship between human rights and the protection of IP is that of human rights primacy. Under this theory, "the protection of the non-human rights aspects of intellectual property protection should be subordinated to human rights obligations."[95] Human rights primacy as a tool to mediate tensions caused by IP protection involves striking a balance between the public and private interests in innovation with the primary objective of promoting and protecting human rights.[96] Additionally, this tool of analysis is premised on categorizing IP protections as qualitatively different from other human rights.[97] Specifically, human rights primacy understands IP protections as privileges assigned by the state according to a pre-determined set of criteria.[98] By contrast, human rights are innate to an individual and are only recognized (rather than granted) by the state.[99] IP rights can be licensed or otherwise assigned, whereas human rights are universal and inalienable.[100] Although similar to the strict scrutiny approach advanced by Chon, human rights primacy carries a number of alternating theories that can be used to delineate the scope of rights.

Core Minimum

One such framework is the core minimum approach advocated by both Laurence Helfer and Peter Yu in similar iterations.[101] The ICESCR requires that states take sufficient steps, as determined by the resources available to that state, to realize the obligations to protect economic, social, and cultural rights enshrined in the Convention.[102] Regardless of available resources, however, states are obliged to guarantee certain minimum levels of rights protection.[103] The core minimum approach seeks to reduce the competing categories of rights—those of the innovator and those of the community that desire the technology—to the "irreducible core."[104] For innovators, the core right under Article 15(1)(c) of the ICESCR is "a zone of personal autonomy in which authors can achieve their creative potential, control their productive output, and lead independent intellectual lives."[105] Once this irreducible core of rights has been protected, any additional protections afforded to innovators must be measured against other human rights.[106] The CESCR directs states to ensure that their IP protection regimes "constitute no impediment to their ability to comply with their core obligations in relation to the rights to food, health and education, as well as to take part in cultural life and to enjoy the benefits of scientific progress and its applications, or any other right enshrined in the Covenant."[107] This approach takes as a starting point that there are certain minimum human rights standards required of states, and locates intellectual property rights as one of the tools to be utilized in advancing those standards.[108] Thus, as Yu notes, under the core minimum approach

> states will not violate the ICESCR if they modify or roll back excess protection required under TRIPS, the WIPO treaties, and other international, regional, and bilateral treaties provided that such protection does not have any human rights basis. They can also do so if the protection already exceeds what is required under their core minimum obligations and if they offer compelling evidence of the competing demands with other human rights obligations.[109]

Applying this to the situation of protections for clean energy technologies, it appears that anything other than the protection

of an innovator's "zone of personal autonomy" would violate a state's other human rights obligations under the ICESCR. As discussed above, the realization of even minimum standards of the various rights will allow a state to not only secure clean energy technology, but also develop domestic capacities to adapt the technology and develop locally relevant diffusion mechanisms.

Just Remuneration

Another framework for delineating human rights obligations in relation to IP protections for clean energy technology is the just remuneration approach.[110] Similarly based off of the primacy of human rights, the just remuneration approach seeks to delineate the human rights dimensions of IP protections and assess adequate compensation for use of the protected technology.[111] The underlying theory is that IP protections have limitations in the form of other human rights.[112] Thus, if it is within an individual's human rights to utilize a particular creation in advancement of those rights, some sort of compensation would be due for any limitations.[113] This is different from a compulsory licensing framework, although a national-level licensing policy could follow from this theory.[114] The just remuneration model requires that the innovator be paid for his creation, either by the person or entity using it, or by the state on behalf of the public (and in fulfillment of the state's obligations to advance human rights protections).[115]

Under this analysis, the IP protections extended to clean energy technologies reflect a mix of human rights obligations and non-human rights (economic) purposes. As with almost all IP, the innovator of clean energy technologies possesses (human) rights to the protection of moral or material interests in his intellectual creations.[116] However, if the utility of the technology would serve to advance the human rights of others, then the interests of the author are not limitless.[117] In order to adequately protect the innovator's rights under Article 15 of the ICESCR, a state may employ a just remuneration approach that provides appropriate compensation in the context of a compulsory license to utilize the technology for public welfare.[118] This effectively changes the protection from an IP form to a human rights form, by balancing only the human rights interests of the innovator against the human rights interests of the individual, industry, or state that is pursuing access to the technology. Under this framework, "human rights grant to the [entity seeking access to the technology] a compulsory license, as compared to a free license, and to the right holder a right to remuneration, rather than exclusive control."[119] Thus, those individuals or entities holding patents to important clean energy technology could have their human rights guaranteed by receiving adequate compensation for their technologies.

Conclusion

Although the existing flexibilities within the TRIPS Agreement which, through the Doha Declaration, were asserted to be sufficient for facilitating access to essential medicines may similarly be sufficient for easing the IP protections on important clean energy technologies, the fundamental differences between the regimes of IP and human rights protections warrants this human rights analysis. The TRIPS Agreement is focused on "the promotion of innovation through the provision of commercial incentives."[120] With its economic priorities at odds with those of the human rights approach, which is centered on the protection and promotion of human rights, TRIPS is not an ideal or sufficient basis upon which to build climate change solutions. Instead, in order to keep the climate stabilization framework grounded in the realities of the human suffering induced by climate change, solutions to the technology access gap should begin with a human rights analysis, even if they are eventually realized through TRIPS flexibilities.

Beyond the mainstreaming of human rights in the climate stabilization context, the human rights analyses assist in identifying a range of interests and obligations beyond the transfer of a clean energy technology to a developing country. Funding and programmatic support for the development stage of clean energy technologies in developing states is a more sustainable fix for the climate change problem. Local technology industries in developing countries would benefit more from direct access to technologies that they could improve or adapt to their local contexts if they had increased training in know-how and know-why. In many ways, this would place developing countries on equal footing with developed countries and would enable the development of build-on technologies.

The human rights analysis also reflects an obligation of states to cooperate internationally to lend their support to the realization of human rights for individuals outside of their territories. In the context of the UNFCCC negotiations, the intergovernmental bloc of developing countries within the UN, known as the G77, has advocated for the creation of a multilateral fund to buy up the various IP instruments protecting clean energy technologies.[121]

As at least one commentator has stated, "[a]n appropriate and effective 'social contract' needs to be developed around low carbon and climate resilient innovation to balance public and private interests."[122] Rather than simply transferring technology or purchasing the IP protections to certain technologies, the framework in which innovation can be incentivized and made accessible needs to be revisited.

Endnotes: Climate Change, Intellectual Property, and the Scope of Human Rights Obligations

[1] *See* Press Release, U.N. High Commissioner for Human Rights (OHCHR), Cancun Climate Summit: UN Food Expert Calls for a "Green Marshall Plan for Agriculture" (Nov. 29, 2010), http://www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=10565&LangID=E (last visited Jan. 28, 2011) (describing that by 2080, 600 million additional people would be at risk of hunger as a direct result of climate change and warning of the threat of fifty percent reduction in agricultural production in some parts of South Africa).

Endnotes: Climate Change, Intellectual Property, and the Scope of Human Rights Obligations *continued on page 95*

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[2] The UN Human Rights Council's Special Rapporteur on adequate housing expressed that climate change would lead to advanced desert frontiers, failure of pastoral farming systems, and land degradation which would in turn lead to increased migration to and pressure on urban centers. *See, e.g.*, *Summary of the Human Rights Council Panel Discussion on the Relationship between Climate Change and Human Rights*, U.N. HIGH COMMISSIONER FOR HUMAN RIGHTS (OHCHR), ¶ 4 (June 15, 2009) [hereinafter OHCHR Panel Discussion], http://www2.ohchr.org/english/issues/climatechange/docs/SummaryPanelDiscussion.doc; *see generally* U.N. High Comm'r for Human Rights, *Report of the Office of the United Nations High Commissioner for Human Rights on the Relationship Between Climate Change and Human Rights*, U.N. Doc. A/HRC/10/61, ¶ 72-77 (Jan. 15, 2009) [hereinafter OHCHR Report CC-HR], http://daccess-dds-ny.un.org/doc/UNDOC/GEN/G09/103/44/PDF/G0910344.pdf?OpenElement.

[3] *See* John H. Knox, *Linking Human Rights and Climate Change at the United Nations*, 33 HARV. ENVTL. L. REV. 477, 481, 494, 498 (2009).

[4] For the purposes of this paper "climate change" refers to the social crisis of anthropogenic effects on climatic temperature.

[5] *See, e.g.*, Margreet Wewerinke, Member, Human Rights and Climate Change Working Group, Many Strong Voices: Climate Change, Food Security, and Human Rights, Address to Side-event at the United Nations Framework Convention on Climate Change, 16th Conference of the Parties, Cancun, Mex. (Dec. 1, 2010).

6 *See, e.g.*, Knox, *supra* note 3; *see also* OHCHR Panel Discussion, *supra* note 2, ¶ 36 (stating that "The United States of America, while agreeing that climate change had implications for the full enjoyment of human rights, did not consider that there was a direct formal relationship between climate change and human rights as a legal matter.").

[7] *See generally* OHCHR Report CC-HR, *supra* note 2, ¶ 72-77.

[8] *Id.* ¶ 21.

[9] LENNY BERNSTEIN ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2007: SYNTHESIS REPORT: AN ASSESSMENT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 55-62 (2007) (describing the adaptation and mitigation options available at global and regional levels).

[10] *See* RON BENIOFF ET AL., NAT'L RENEWABLE ENERGY LABORATORY (NREL), STRENGTHENING CLEAN ENERGY TECHNOLOGY COOPERATION UNDER THE UNFCCC: STEPS TOWARD IMPLEMENTATION (2010), www.nrel.gov/docs/fy10osti/48596.pdf.

[11] *See* SHANE TOMLINSON ET AL., E3G/CHATHAM HOUSE, INNOVATION AND TECHNOLOGY TRANSFER: FRAMEWORK FOR GLOBAL CLIMATE DEAL 22 (2008), http://www.e3g.org/images/uploads/E3G_Innovation_and_Technology_Transfer_Full_Report.pdf.

[12] CTR. FOR INT'L ENVTL. LAW, HUMAN RIGHTS AND CLIMATE CHANGE: PRACTICAL STEPS FOR IMPLEMENTATION 6 (2009), http://www.ciel.org/Publications/CCandHRE_Feb09.pdf.

[13] *See generally* BERNSTEIN ET AL., *supra* note 9.

[14] *See generally id.*

[15] *See generally id.*

[16] *See* U.N. Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107 [hereinafter UNFCCC], http://unfccc.int/resource/docs/convkp/conveng.pdf.

[17] *Id.* art. 1(2).

[18] *See, e.g.*, BERNSTEIN ET AL., *supra* note 9.

[19] The reports of the IPCC form the basis of reports from the UN Office of the High Commissioner for Human Rights.

[20] BERNSTEIN ET AL., *supra* note 9; *Organization Page*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, http://www.ipcc.ch/organization/organization.shtml (last visited Feb. 15, 2011).

[21] BERNSTEIN ET AL., *supra* note 9.

[22] *Id.* at 72.

[23] *Id.*

[24] *Id.*

[25] *Id.* at 53.

[26] *Id.*

[27] OHCHR Report CC-HR, *supra* note 2 (noting that mitigation strategies are often complemented by adaptation programs that strive to "strengthen the capacity of societies and ecosystems to cope with and adapt to climate change risks and impacts"). While adaptation is an important component of any comprehensive response to the climate change crisis, this paper focuses on the mitigation efforts that aim to restructure global energy production.

[28] Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 10, 1997, 37 I.L.M. 22 [hereinafter Kyoto Protocol], http://unfccc.int/resource/docs/convkp/kpeng.pdf.

[29] *See* FREDERICK M. ABBOTT, INT'L CTR. FOR TRADE AND SUSTAINABLE DEV., INNOVATION AND TECHNOLOGY TRANSFER TO ADDRESS CLIMATE CHANGE: LESSONS FROM THE GLOBAL DEBATE ON INTELLECTUAL PROPERTY AND PUBLIC HEALTH 1 (2009), http://ictsd.org/downloads/2009/07/innovation-and-technology-transfer-to-address-climate-change.pdf (noting the international acknowledgement that greenhouse gasses from combustion energy generation substantially contribute to causing climate change and thus that one of the primary objectives to addressing climate change is to develop and implement alternative energy-generation systems including solar, wind, biomass, nuclear, geothermal, and tidal energy sources).

[30] *See* TOMLINSON ET AL., *supra* note 11.

[31] *See generally* JOHN H. BARTON ET AL., INT'L CTR. FOR TRADE AND SUSTAINABLE DEV., INTELLECTUAL PROPERTY AND ACCESS TO CLEAN ENERGY TECHNOLOGIES IN DEVELOPING COUNTRIES: AN ANALYSIS OF SOLAR PHOTOVOLTAIC, BIOFUEL AND WIND TECHNOLOGIES (2007), http://ictsd.org/downloads/2008/11/intellectual-property-and-access-to-clean-energy-technologies-in-developing-countries_barton_ictsd-2007.pdf.

[32] *Id.* at 7 (referencing the suggestion of others that flexibility is needed in the context of IP in clean energy technology); TOMLINSON ET AL., *supra* note 11, at 83.

[33] TOMLINSON ET AL., *supra* note 11, at 83.

[34] *Id.* at 83-85 (discussing global competitiveness debates in the climate context).

[35] *Id.*

[36] BARTON ET AL., *supra* note 31.

[37] *Id.* at 9, 12, 15 (explaining the background and development of the technologies).

[38] *Id.* at 20 (highlighting the risk that broad patents could hinder development of more efficient or less expensive technologies).

[39] *Id.* at 9.

[40] *See* Peter K. Yu, *Reconceptualizing Intellectual Property Interests in a Human Rights Framework*, 40 U.C. DAVIS L. REV. 1039, 1045 (2007), http://lawreview.law.ucdavis.edu/issues/Vol40/Issue3/DavisVol40No3_Yu.pdf; Krishna Ravi Srinivas, *Climate Change, Technology Transfer and Intellectual Property Rights* 1 (Res. & Info. Sys. for Developing Countries, Discussion Paper No. 153, 2009), http://unpan1.un.org/intradoc/groups/public/documents/un-dpadm/unpan037297.pdf (suggesting that IPR holders are unlikely to make the necessary technology transfers on a timeline that will actually benefit humanity).

[41] *See, e.g.*, Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations Resulting from Global Warming Caused by Acts and Omissions of the United States, Dec. 7, 2005, http://s3.amazonaws.com/isuma.attachments/ICC_Petition_7Dec05.pdf (providing the only petition to date filed in a regional human rights court dealing with climate change-related human rights violations).

[42] *See* OHCHR Report CC-HR, *supra* note 2, ¶ 18.

[43] *See, e.g.*, Universal Declaration of Human Rights, G.A. Res. 217A (III), U.N. Doc. A/810 (1948) [hereinafter UDHR]; International Covenant on Economic, Social and Cultural Rights, 993 U.N.T.S. 3 (1966) [hereinafter ICESCR]; International Covenant on Civil and Political Rights, 999 U.N.T.S. 171 (1976) [hereinafter ICCPR].

[44] ICCPR, *supra* note 43.

[45] ICESCR, *supra* note 43.

46 *See* Stockholm Declaration on the Human Environment of the United Nations Conference on the Human Environment, U.N. Doc. A/Conf 48/14/Rev.1, 11 I.L.M. 1416 (June 16, 1972) [hereinafter the Stockholm Declaration] (guaranteeing a right of environmental quality, but in a non-binding forum); African [Banjul] Charter on Human and Peoples' Rights, adopted June 27, 1981, 21 I.L.M. 58 (entered into force Oct. 21, 1986), arts. 22, 24, http://www.africa-union.org/official_documents/Treaties_%20Conventions_%20Protocols?Banjul%20Charter.pdf (indicating that binding regional human rights conventions and their protocols may provide bases for asserting climate change-related human rights violations in the context of environmental quality rights, stating that "All peoples shall have the right to a general satisfactory environment favorable to their development"); *see also* Organization of American States, Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights, art. 11, *opened for signature* Nov. 17, 1988, O.A.S.T.S. No. 69 (entered into force Nov. 16, 1999) [hereinafter San Salvador Protocol] (stating "Everyone shall have the right to live in a healthy environment . . . .").

[47] *See* John H. Knox, *Diagonal Environmental Rights*, *in* Sigrun Skogly & Mark Gibney, Universal Human Rights and Extraterritorial Obligations 82 (Mark Gibney et al. eds., 2010) (noting that "[h]uman rights law operates primarily along a vertical axis, setting out individuals' rights against their governments and the corresponding duties owed by the governments, but it may also be diagonal, giving rise to duties on the part of states that extend beyond their own territor[ies]").

[48] OHCHR Report CC-HR, *supra* note 2, at 5.

[49] *Id*.

[50] *Id.*

[51] *Id.* at 8-10.

[52] *Id.* at 8-18.

[53] *Id.* at 18-22.

[54] *Id.* at 24, ¶ 72.

[55] *Id.* (citing CESCR general comments No. 12 (1999), No. 13 (1999), No. 14 (2000), and No. 15 (2002) on adequate food, education, highest attainable standard of health, and water, respectively).

[56] ICESCR, *supra* note 43, art 2(1).

[57] ICCPR, *supra* note 43, art. 2(1).

[58] U.N. Committee on Economic, Social, and Cultural Rights, *The Right to the Highest Attainable Standard of Health: General Comment No. 14*, ¶ 45, U.N. Doc. E/C.12/2000/4 (Aug. 11, 2000) [hereinafter CESCR No. 14], http://daccess-dds-ny.un.org/doc/UNDOC/GEN/G00/439/34/PDF/G0043934.pdf?OpenElement.

[59] *See* Barton et al., *supra* note 31, at 2-5.

[60] *See id.*

[61] Tomlinson et al., *supra* note 11, at 88.

[62] *See* David Ockwell et al., *Enhancing Developing Country Access to Eco-Innovation: The Case for Technology Transfer and Climate Change in a Post-2012 Policy Framework* 21 (OECD Environment Working Papers No. 12, 2010), http://www.oecd-ilibrary.org/environment/enhancing-developing-country-access-to-eco-innovation_5kmfplm8xxf5-en (reporting a situation in India where local firms' efforts to develop commercial hybrid vehicle technology were stalled by the process of negotiating the IP protections on existing technology with an international industry leader).

[63] Barton et al., *supra* note 31, at 4.

[64] Tomlinson et al., *supra* note 11, at 88-89.

[65] Benioff et al., *supra* note 10, at 1, 10.

[66] *See id.*

[67] *Id.* at 10.

[68] Barton et al., *supra* note 31, at 3.

[69] *Id.*

[70] *Id.*

[71] *See* Abbott, *supra* note 29, at v.

[72] World Trade Organization, Ministerial Declaration of 14 November 2001, WT/MIN(01)/DEC/2, 41 I.L.M. 746, ¶ 6 (2002) [hereinafter Doha Declaration].

[73] CESCR No. 14, *supra* note 58, at 9-13.

[74] *See generally* Doha Declaration, *supra* note 72.

[75] *Id.*

[76] *See generally id.*

[77] *See generally, e.g.*, United Nations Framework Convention on Climate Change, Subsidiary Body for Scientific and Technological Advice, Thirty-third Session, Nov. 4-Dec. 5, 2010, *Report on Options to Facilitate Collaborative Technology Research and Development – Note by the Chair of the Expert Group on Technology Transfer*, U.N. Doc. FCCC/SBSTA/2010/INF.11 (Nov. 24, 2010) [hereinafter UNFCCC Note by the Chair], http://unfccc.int/resource/docs/2010/sbsta/eng/inf11.pdf.

[78] *See generally* United Nations Framework Convention on Climate Change, 15th Conference of the Parties, Copenhagen, Den., Dec. 7-19, 2009, *Copenhagen Accord*, U.N. Doc. FCCC/CP/2009/11/Add.1 (Mar. 30, 2010) [hereinafter COP 15], http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf; United Nations Framework Convention on Climate Change, *Report of the Subsidiary Body for Implementation on its Thirty-second Session, held in Bonn from 21 May to 9 June 2010*, U.N. Doc. FCCC/SBI/2010/10 (Aug. 25, 2010), http://unfccc.int/resource/docs/2010/sbi/eng/10.pdf.

[79] *See* Wewerinke, *supra* note 5; *see also* OHCHR Panel Discussion, *supra* note 2.

[80] *See generally* COP 15, *supra* note 78; SBI 32, *supra* note 78.

[81] *See id.*

[82] "Regime shifting," as applied by Laurence Helfer to the context of intellectual property, describes a type of forum shopping practiced by states and NGOs whose political interests receive limited traction or are silenced in the intellectual property regime. These actors are increasingly turning to non-IP regimes, with different substantive, institutional, and relational dimensions, in search of new (soft) law-making that will serve to maximize their interests. Laurence Helfer, *Regime Shifting: The TRIPS Agreement and New Dynamics of International Intellectual Property Making,* 29 Yale J. Int'l L. 1, 8-14 (2004).

[83] The "flexibilities" within the TRIPS Agreement are exceptional limitations that are intended to accommodate some extreme human rights conditions with only limited easements in the IP protection (compulsory licensing). The exceptional nature of these provisions means that they "have more often than not been construed against the needs of users." Margaret Chon, *Intellectual Property and the Development Divide*, 27 Cardozo L. Rev. 2813, 2880 (2006).

[84] Most analyses of the problem of access to clean energy technologies and IP are structured around various IP instruments. *See, e.g.*, Abbott, *supra* note 29, at 4-7.

[85] U.N. Committee on Economic, Social, and Cultural Rights, *The Right of Everyone to Benefit From the Protection of the Moral and Material Interests Resulting From Any Scientific, Literary or Artistic Production of Which He or She is the Author (Article 15, Paragraph 1 (c), of The Covenant): General Comment No. 17*, U.N. Doc. E/C.12/GC/17 (Jan. 12, 2006) [hereinafter CESCR No. 17], http://www.unhcr.org/refworld/pdfid/441543594.pdf.

[86] U.N. Committee on Economic, Social, and Cultural Rights, *The Nature of States Parties' Obligations (Art. 2, Para. 1, of the Covenant): General Comment No. 3*, U.N. Doc. E/1991/23 (Dec. 14, 1990) [hereinafter CESCR No. 3], http://www.unhcr.org/refworld/pdfid/4538838e10.pdf.

[87] *See id.*

[88] *See id.*

[89] *See id.*; CESCR No. 17, *supra* note 85; CESCR No. 14, *supra* note 58.

[90] *See* Ockwell et al., *supra* note 62, at 7 (concluding that "[i]ndigenous eco-innovation capabilities are essential to facilitating *both* the diffusion of existing eco-innovations within developing countries *and* sustainable economic development based on the adoption, adaptation and development of environmentally sound technologies that fit within the bespoke conditions faced by developing countries").

[91] *Id.* at 22 (relaying how Indian firms producing light-emitting diodes ("LEDs") expressed that they would not be able to begin production of LEDs simply with access to technology, but rather needed knowledge and experience of the manufacturing process).

[92] Chon, *supra* note 83, at 2880-83.

[93] *Id.* at 2884-85.

[94] *See, e.g.*, UNFCCC Note by the Chair, *supra* note 77.

[95] Yu, *supra* note 40, at 1045.

[96] United Nations Commission on Human Rights, Sub-Commission on the Promotion and Protection of Human Rights, Fifty-second Session, *The Impact*

of the Agreement on Trade-Related Aspects of Intellectual Property Rights on Human Rights, U.N. Doc. E/CN.4/Sub.2/2001/13 (June 27, 2001) [hereinafter UNCHR Trade-Related Aspects], http://www.unhchr.ch/Huridocda/Huridoca.nsf/e06a5300f90fa0238025668700518ca4/590516104e92e87bc1256aa8004a8191/$FILE/G0114345.pdf.

[97] *See id*. ¶ 14.

[98] *Id*.

[99] *Id.*

[100] *Id.*

[101] *See* Helfer, *supra* note 82; *see also* Yu, *supra* note 40, at 1105.

[102] *See* CESCR No. 3, *supra* note 86; CESCR No. 17, *supra* note 85; CESCR No. 14, *supra* note 58.

[103] *See id*.

[104] Yu, *supra* note 40. Helfer, *supra* note 82.

[105] *Id.*

[106] *See id.*

[107] CESCR No. 17, *supra* note 85, ¶ 35.

[108] Helfer, *supra* note 82, at 1018.

[109] Yu, *supra* note 40, at 1105-06.

[110] *See generally id.* at 1095.

[111] *See generally id.* at 1096.

[112] *See id.*

[113] *See id.* at 1094-97.

[114] *See generally id.*

[115] *See generally id.*

[116] *See id.*

[117] *See id.*

[118] *See id.*

[119] *See id.* at 1096.

[120] UNCHR Trade-Related Aspects, *supra* note 96, ¶ 22.

[121] *See generally* Britt Childs Staley et al., World Resources Inst., From Positions to Agreement: Technology and Finance at the UNFCCC (2008), http://pdf.wri.org/working_papers/from_positions_to_agreement.pdf.

[122] Tomlinson et al., *supra* note 11, at 87.